

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	PS Docket No. 07-114
Wireless E911 Location Accuracy)	
Requirements)	
)	WC Docket No. 05-196
E911 Requirements for IP-Enabled Service)	
Providers)	

COMMENTS OF SPRINT NEXTEL CORPORATION

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Summary of Comments

In this proceeding, the Commission asks a number of important questions pertaining to 911 location accuracy. Sprint Nextel supports further investigation of these questions and supports the Commission's objective of improving location accuracy. However, the Commission has already taken significant action in its recent Second Report and Order. Sprint Nextel urges the Commission to refrain from making further changes to the rules at this time until the record is further developed.

The Commission requests information on the current technology marketplace and the availability of location accuracy technologies. The Commission must carefully review the information it receives and bear in mind that carriers have already invested valuable time and resources in meeting the current and revised standards. Sprint Nextel would support the creation of a group of interested and knowledgeable stakeholders that could be tasked with gathering relevant data and evaluating the questions set forth in this proceeding. As the Commission examines the rollout of advanced services such as 4G, Sprint Nextel urges the Commission to take into account the limitations of wireless technology as compared with wireline broadband technology. In light of the Commission's recent actions in the Second Report and Order, Sprint Nextel asserts that it is not appropriate to make further significant changes to the rules at this time.

With respect to compliance testing, Sprint Nextel would support the issuance of voluntary guidelines based on Alliance for Telecommunications Industry Solutions ("ATIS") Emergency Services Interconnection Forum ("ESIF") recommendations. It would be unduly burdensome, however, for the Commission to require carriers to submit routine reports on testing without a clear need for such data.

Challenging environments such as those discussed in the Further Notice of Proposed Rulemaking present unique issues, and Sprint Nextel believes this is an area that needs to be studied closely. Sprint Nextel is not aware of any significant technology advances that could be used to address such environments. The Commission should be cautious, however, when evaluating proposed technologies and should consider the impact on carriers that will ultimately need to deploy these new technologies.

Sprint Nextel supports developing the record further as it pertains to new technologies, including VoIP services and services being provided over mobile broadband networks. We urge the Commission to clarify its 911 rules as applied to these services. In addition, we urge the Commission to clarify that service providers that offer the equivalent of mobile phone service from a consumer perspective are responsible for providing 911 service and location information.

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SPRINT NEXTEL COMMENTS

I. INTRODUCTION

Sprint Nextel supports the Commission’s efforts to improve and clarify its rules pertaining to location accuracy and recognizes the valuable public safety objectives behind these rules. Sprint Nextel applauds the Commission’s recent actions in the Second Report and Order, which will ensure that all wireless carriers provide important Phase II location information at accuracy levels that meet the needs of the public safety community. In this proceeding, the Commission considers taking additional steps to modify its location accuracy rules. We support the Commission’s objective of gathering additional information to assess whether further changes to the location accuracy rules may be needed at a future date, but we urge the Commission to refrain from making significant changes to the rules at this time until the record is further developed.

In the Further Notice of Proposed Rulemaking (“FNPRM”) and Notice of Inquiry (“NOI”), the Commission seeks comment on a variety of different questions related to location accuracy in order to determine whether its location accuracy requirements should be revised. In general, Sprint Nextel supports further investigation of these questions and supports the Commission’s objective of improving location accuracy across all technology platforms. Sprint

Nextel would support the creation of a consensus-based group comprised of representatives from the industry and public safety community in order to study the questions raised by the Commission in this proceeding and make recommendations. Any changes to the location accuracy requirements should be fair and uniform and should be carefully weighed so that the industry is not overburdened at a pivotal time when many new technologies are being developed and deployed. Sprint Nextel also urges the Commission to take into account the valuable time and resources carriers and manufacturers have invested in making the existing E-911 system a reality and to consider these efforts when promulgating new regulations for E-911 location accuracy.

II. FURTHER NOTICE OF PROPOSED RULEMAKING

A. Existing and Prospective Technologies

The Commission has requested current information on the state of wireless location technologies. The Commission asks how location determination can be improved upon, whether there are existing location technologies available today that carriers can immediately adopt and what the relative quantitative advantages versus costs of such deployment would be.¹ Sprint Nextel supports the Commission's efforts to gain a better awareness of new location technologies that are currently or soon may become available. Sprint Nextel would caution the Commission, however, to carefully evaluate claims made by vendors, who stand to benefit greatly from any further regulations that may be developed.

The Commission should take into account that, although a technology may be technically feasible for carriers to deploy, factors such as cost, labor, and the time associated with

¹ E911 Location Accuracy Requirements, E911 Requirements for IP-Enabled Service Providers, PS Docket No. 07-114, WC Docket No. 05-196, *Further Notice of Proposed Rulemaking and Notice of Inquiry*, (rel. September 23, 2010) ("FNPRM and NOI"), at para. 15.

deployment may make such deployment both impractical and economically infeasible for carriers and ultimately consumers. Sprint Nextel would encourage the Commission to take into account the varied technologies in use by carriers and the significant costs carriers have already expended to meet the Commission's existing and recently revised E-911 location accuracy requirements. Sprint Nextel believes that many of the questions raised in the Commission's Further Notice of Proposed Rulemaking require greater study and analysis before they can be answered. In order to advance this effort, Sprint Nextel would support the creation of a group of interested and knowledgeable stakeholders that could be tasked with gathering relevant data and evaluating the questions set forth in this proceeding.

B. Potential Modifications to the Accuracy Standard

The Commission asks whether it should modify the standard for network-based and handset-based providers.² The Commission recently adopted new standards for network-based and handset-based providers after careful deliberation and input from all parties, including carriers and the public safety community. Given the Commission's recent action, there is no immediate need to modify these requirements. There is certainly no evidence that an increase in these standards is technically or economically feasible. It may be appropriate, however, for the Commission to consider the disparate requirements that are now in place with respect to E-911 location accuracy. Specifically, the Commission should bear in mind that there is a disparity between the network-based and handset-based benchmarks and yet another disparity between benchmarks applied to some carriers before the rules were adopted and those applied to all other carriers with the adoption of the new rules.

² *Id.* at para. 17.

The Commission has also requested comment on whether it should adopt a single location accuracy standard rather than maintain the network/handset distinction.³ Sprint Nextel believes it would be premature to adopt a single standard. Given the current technologies in use by carriers and the varied nature of carriers' networks and technologies, it is reasonable to have different standards at this time. As technology evolves, however, a single standard may be appropriate. Indeed, it would appear that carriers are generally moving toward a device centric GPS location technology.

Although it may not yet be the appropriate time to adopt a single standard, Sprint Nextel believes that the accuracy requirements associated with the two current categories, handset-based and network-based, could be modified to be more closely aligned. For example, the location accuracy requirements that have been adopted for carriers using a network-based solution contain an exclusion for areas where triangulation is not possible. This exclusion is extremely broad compared with the exclusion allowed for carriers using a handset-based solution. The handset-based exclusion is limited to heavy forested areas and is limited to 15% of counties or PSAP areas.

The Commission has also requested comment on whether carriers can employ a combination of handset-based and network-based location technologies (a hybrid solution).⁴ Some carriers, including Sprint, are already utilizing a combination of handset-based and network-based location technologies. While Sprint Nextel's Phase II E-911 solution for its CDMA network has been categorized as a handset-based solution, Sprint Nextel's solution also includes network-based components. Sprint Nextel's solution on its CDMA network utilizes Assisted-Global Positioning System ("A-GPS") enabled handsets and supplements this

³ *Id.* at para. 17.

⁴ *Id.* at para. 18.

technology with Advanced Forward Link Trilateration (“AFLT”) on its network. AFLT utilizes network transmissions observed at the handset for time difference of arrival calculations (“TDOA”) calculations. Sprint Nextel maintains that there are numerous factors that impact GPS technology including line-of-site limitations, multi-pathing, in-building coverage, and weather. In order to mitigate some of these factors, Sprint Nextel’s CDMA solution also relies on AFLT. There are also inherent limitations to AFLT technology, however, including cell site coverage, multi-pathing, and CDMA power control.

The Commission asks whether hybrid technologies provide greater location accuracy than either network-based or handset-based solutions alone. Based on Sprint Nextel’s experience, hybrid technologies provide an extra layer of reliability, though not necessarily greater accuracy. In other words, using hybrid technologies helps to ensure that the Phase II location accuracy data can be provided, but it does not by default provide a more granular level of accuracy. Both handset-based solutions and network-based solutions by themselves have certain limitations. Using a hybrid solution can allow carriers to provide location accuracy data despite these limitations, although the quality of the data will vary.

The Commission asks how the implementation of 3G and 4G networks, services, and devices impact wireless E911 requirements.⁵ Specifically, the Commission asks how else 3G and 4G technologies might lead to improved means or methods of location accuracy.⁶ It is not clear at this stage that 4G networks will necessarily bring improved opportunities for location accuracy. 4G technology improves upon existing technology in terms of data rates, but 4G technology does not automatically equate with new or different end user features.

⁵ *Id.* at para. 18.

⁶ *Id.*

As the Commission considers the rollout of wireless broadband technologies and the potential impact on E911 location accuracy, we urge the Commission to recognize the many unique factors that impact wireless broadband technologies. There are numerous factors that impact the availability and efficiency of wireless broadband services that do not exist for wireline broadband service. For example, wireless coverage areas are affected by variables such as topography, siting constraints, forestation, and other unique environments such as urban canyons. In addition, handset performance is constrained by important factors such as size, power, cost, and consumer expectations. Wireless broadband networks are also more subject to capacity constraints. As consumers continue to utilize wireless broadband for a broader range of applications, greater strain will be placed on wireless carriers' networks. All of these variables ultimately influence the efficiency of wireless broadband and will affect availability of service and data speeds.

In order to create a wireless broadband network that approximates wireline broadband service, significant wireless infrastructure is needed. More network infrastructure, in the form of wireless sites and antennas, is necessary to produce the same level of network coverage within a given area. If wireless carriers are required to provide specific cell site information that corresponds to data usage at each one of these new sites, this will create a significant additional burden on carriers.

C. Compliance Testing/Schedule for Testing

The Commission seeks comment on the methodology that should be used to verify compliance.⁷ Sprint Nextel continues to assert that the Commission should look to recommendations developed by industry standards-setting organizations when developing an approach to compliance testing. Specifically, Sprint Nextel urges the Commission to look to the

⁷ FNPRM and NOI at para. 19.

NRIC FG1A testing recommendations and the supplementary Alliance for Telecommunications Industry Solutions (“ATIS”) Emergency Services Interconnection Forum (“ESIF”) recommendations as it develops guidelines for testing.⁸ These recommendations were developed through an open technical forum process with input from a variety of stakeholders, including those in the wireless telecommunications industry.

The Commission also asks whether the guidelines set forth in OET Bulletin No. 71 should be used as the basis for compliance testing.⁹ Sprint Nextel does not believe OET Bulletin No. 71, in its current form, should be the basis for compliance testing. OET Bulletin No. 71, which was issued in 2000, is outdated and should be revised and updated. As outlined above, Sprint Nextel would support using recommendations developed by NRIC and ATIS to clarify and augment the guidelines set forth in OET Bulletin No. 71. Any testing guidelines the Commission issues, however, should continue to be voluntary for carriers.

The Commission also asks whether it should specify a certain level of indoor versus outdoor testing in order to reflect the proportion of indoor versus outdoor use.¹⁰ Sprint Nextel agrees with comments filed by Qualcomm stating the proportion of calls placed to 911 from indoors varies from PSAP to PSAP, from town to town, from county to county and from state to state.¹¹ Because of these variations, adopting a specified level of indoor testing is not reasonable without further data. Sprint Nextel also notes that the technology for performing indoor testing is still in the process of being developed. Additional time is needed for improvements to be

⁸The recommendations referenced herein include the following: High Level Requirements for Accuracy Testing Methodologies (ATIS-0500001), Maintenance Testing (ATIS-0500010), High Level Requirements for End-to-End Functional Testing (ATIS-0500009), Define Topologies & Data Collection Methodology (ATIS-0500011).

⁹ FNPRM and NOI at para. 20.

¹⁰ *Id.*

¹¹ Qualcomm Comments at 5.

made to this technology. It would be premature to impose specific indoor testing requirements on carriers at this time.

The Commission has tentatively concluded that it would establish a mandatory schedule for accuracy testing.¹² The Commission has requested comment on the appropriate schedule for testing. APCO has suggested that testing be required every two years. The Commission has also asked whether carriers should be required to file compliance and maintenance testing data with the Commission, one or more national public safety organizations, PSAPs or some combination of these entities.

Carriers already have numerous ongoing reporting requirements associated with regulation by the FCC. It is not clear that routine reports on 911 testing are necessary. Such a requirement would be extremely burdensome to carriers. Sprint Nextel is also concerned that the time and resources spent on such reports could prove to be an empty exercise if this data is merely collected, but not utilized for a specific purpose.

D. Challenging Environments

The Commission seeks to refresh the record on how location information and accuracy can be improved in more challenging environments, including indoor settings, urban canyons, buildings including high-rises, rural environments characteristic of heavy forestation, mountainous terrain, or sparsely located wireless towers.¹³ The Commission asks whether accuracy needs differ for indoor, outdoor, rural, and urban location determinations. The Commission also asks whether it would be appropriate to establish different threshold criteria depending on the environment. Challenging environments such as those listed above do present unique issues, and Sprint Nextel believes this is an area that needs to be studied closely. Again,

¹² FNPRM and NOI at para. 21.

¹³ *Id.* at para. 22.

however, the Commission should be cautious when evaluating proposed technologies and should consider the impact on carriers that will ultimately need to deploy these new technologies. In addition, it is not clear how the Commission would go about applying different standards to different environments where calls may be placed.

The Commission also seeks comment on how location information can include an accurate Z-axis component in order to provide greater accuracy in environments such as multiple-story buildings.¹⁴ Although Sprint Nextel supports efforts to improve location accuracy in indoor environments, Sprint Nextel does not support imposing a requirement to provide vertical location accuracy information at this time. Sprint Nextel asserts that the technology is simply not advanced enough for carriers to deploy without further study. Indeed, even if Z-axis location could be reliably provided, it is unlikely that public safety could readily convert this information into a usable format (e.g., 5th floor, office 5A702).

III. NOTICE OF INQUIRY

A. 911 and E911 Requirements for VoIP Services

1. Automatic Location Information

In its Notice of Inquiry, the Commission seeks comment on whether it should require providers of interconnected VoIP services to provide location information to PSAPS without the customer's active cooperation.¹⁵ Sprint Nextel supports the Commission's efforts to explore methods for updating a user's location when using VoIP services, without the need for further input from the user. However, Sprint Nextel urges the Commission to carefully study the technologies that may be used to achieve this objective and recognize the trade-off created by

¹⁴ *Id.* at para. 23.

¹⁵ *Id.* at para. 25.

forcing carriers to an automatic location system. User input will invariably provide more useful information to first responders that are looking for apartment numbers and office suites.

2. Additional VOIP Services

The Commission asks whether it should extend 911 and E-911 obligations to providers of VoIP services that are not currently covered by the rules, including VoIP services that do not fully meet the definition of “interconnected VoIP.”¹⁶ The technology marketplace currently has many variations of IP-enabled services. Sprint Nextel urges the Commission to clarify that there must be an entity responsible for providing 911 with each of these services. In addition, the Commission should establish clear guidelines and definitions for the services.

B. Applicability of 911 and E911 Requirements to Additional Wireless Communications Services, Devices and Applications

The Commission also raises important questions concerning broadband-enabled voice services provided over mobile devices. The Commission seeks comment on what wireless devices, services and applications provide the equivalent of mobile telephony or interconnected VoIP, whether using CMRS, Wi-Fi or other combination of wireless connectivity, yet are not subject to the interconnected VoIP or CMRS 911 and E911 rules.¹⁷ The Commission also asks about consumer expectations when using these services and whether consumers expect to be able to dial 911 and have the PSAP know where they are located.¹⁸ Sprint Nextel supports the Commission’s efforts to examine this technology area more closely. Many of these new services can be viewed as a form of mobile phone service and, as such, should be treated in a similar way for purposes of 911. Consumers have come to expect that location information will be passed

¹⁶ *Id.* at para. 31.

¹⁷ *Id.* at para. 36.

¹⁸ *Id.* at para. 36.

through to the PSAP when they call 911, and they do not always understand the distinctions that exist due to the underlying technology.

Sprint Nextel suggests, when a service closely approximates regular mobile phone service and a subscriber relies on similar features and capabilities, including access to 911, the provider of such service should be responsible for delivering 911 location information. Therefore, the Commission should clarify that the service provider, not the underlying carrier, for services that fall into this category are responsible for providing 911 service and location information.

Requiring the underlying CMRS carrier to provide 911 information for a service it does not itself provide is not technically feasible. Unless a carrier is actively monitoring each data transmission and determining whether the consumer is running a voice application, something that net neutrality advocates would undoubtedly find concerning, it would be impossible to provide location information for the call. Indeed, even with this level of monitoring, it would still be extremely difficult to reverse-engineer location technology into a data stream after it has been initiated. CMRS carriers should not be required to provide features to enhance the services provided by a competitor that does not have to pay for them. Such a result would be unreasonable and could undermine the Commission's objective of promoting competition. In addition, for purposes of regulatory parity, providers that offer a equivalent service to CMRS should be subject to comparable requirements with respect to 911.

Sprint Nextel recognizes, however, that there are significant technological challenges and regulatory complexities involved with many of these services. At a minimum, in light of consumer expectations, Sprint Nextel would urge the Commission to clarify whether 911 obligations exist for these services and to clarify that, if 911 obligations do not exist, consumer

disclosures must be made by these providers so that consumers understand the limitations of their service.

IV. CONCLUSION

The Commission has taken important steps recently to ensure that Phase II location information is provided at a more specific geographic level by all CMRS carriers. Sprint Nextel supports the Commission's efforts to update and further develop the record on location accuracy technology. Sprint Nextel asserts, however, that additional revisions to the CMRS location accuracy rules for E-911 are not justified at this time. We urge the Commission to continue to work closely with the industry and the public safety community to develop the record so that it can fully evaluate whether additional rules should be promulgated.

Respectfully Submitted,

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